

## ABSTRACT

The present invention provides an optical fiber, an optical fiber cable and a radiation detecting system at a low cost. Further, the radiation detecting system is provided which can adequately monitor the radiation leak without delay. The optical fiber cable comprises: an optical fiber including; a core 12 having lightwave guide property and extending along one direction; a clad layer 14 covering over a peripheral surface of the core 12; and a scintillator material dispersed in the clad layer 14 and emitting light when radiation is applied, a radiation-shielding layer 24 covering substantially over a periphery of the optical fiber 10, and a gap 26 located in at least one part of the radiation-shielding layer 24. The radiation detecting system comprises an optical fiber cable 20 adapted to emit light at a region where radiation is applied and transmitting the emitted light, photoelectric conversion means 32 connected to at least one end of the optical fiber cable 20, and processing means 38 detecting when radiation is applied in accordance with an output signal of the photoelectric conversion means 32.